

as above described. Mammæ six, one axillary and two inguinal pairs. Skull and teeth as described above.

Hab. Sogere, S.E. New Guinea; altitude 1750 feet.

Dimensions of the type, an adult female, in spirit:—Head and body 156 millim.; tail 222; hind foot 30; fore arm and hand 42·5; ear (above crown) 17; head 43; muzzle to eye 18·8, to ear 35·5; heel to front of last foot-pad 15; length of the pad 6·8.

Skull.—Basal length 34·0, greatest breadth 22·8; nasals, length 12·3; interorbital breadth 5·7; interparietal, length 4·8, breadth 9·3; infraorbital foramen, height 5·8, length of outer wall 4·0, distance from its outer corner to that of its fellow 11·0; palate, length 20·0, breadth outside m^1 7·0, inside m^1 4·0; palatal foramen, length 5·2; diastema, length 11·3; length of molar series 5·5, of m^1 2·5, of m^2 1·7, of m^3 1·5; basicranial axis 11·0, basifacial axis 23·0. Length of lower jaw (bone only) 23·8, (to incisor tips) 27·0.

4. On some Land-Mollusks from Burmah, with Descriptions of some new Species. By Lieut.-Col. H. H. GODWIN-AUSTEN, F.R.S., F.Z.S., &c.—Part I.

[Received March 23, 1888.]

The following list comprises the shells which have reached me since our late occupation of the above country. The first batch were collected and sent me by my former assistant in the Survey, Mr. M. Ogle, from the districts on the Kyeng-dwen, or Chindwen, east of Manipur. The second I have lately had placed in my hands by Mr. J. Ponsonby, who received them from Captain Spratt, R.A., from Upper Burmah, where that officer has been employed during the late military expeditions. The shells are not in a good state of preservation, and no doubt were collected under very considerable difficulties as regards leisure and deficiency of carriage. There are many new forms, showing what a rich harvest awaits the naturalists who could devote more time and care to the work. We trust that Captain Spratt (son of Admiral Spratt, a life-long worker at the Mollusca) will yet be able to add still more to our knowledge of the species to be found in our newly acquired territory.

I propose in this communication to describe the shells collected by Captain Spratt. Hlindet, where most of them were obtained, is situated on a tributary of the Irrawaddy, which, rising in the hills south of Mandalay, flows north to join that river at the sharp bend below that town. It is through this valley that the new line of railway is to run to the capital from Toungoo.

The late Mr. Francis Fedden, of the Geological Survey, visited this part of Burmah and the Salwin valley, in 1864–65, and brought back with him a good many specimens of land-shells, which were described by Mr. W. Theobald in the Journal of the Asiatic Society for 1870.

There will be also included two or three shells in Mr. Theobald's collection from this part of Burmah.

1. *AUSTENIA? KHYOUNGENSIS*, n. sp.

Locality. Shan Hills.

Shell globose, tumid, not umbilicated; sculpture covered with an epidermis, smooth; colour brown, but the specimen with epidermis still remaining is weathered, in life it is probably polished; spire low, apex rounded; suture shallow; whorls 3, the last ample and convex on periphery; aperture nearly circular; peristome thin, a strong callus on the body-whorl extending into the interior of the shell.

Largest specimen. Size: maj. diam. 20·5, min. 12·0, alt. axis 9·0.

Second specimen. Size: maj. diam. 18·0, min. 13·75, alt. axis 6·8, body-whorl 11·0 mm.

Animal not seen. It would be an interesting species to obtain alive. This is one of those forms which, without an examination of the animal, it is quite impossible to assign to its true generic or sub-generic position; it may be *Cryptosoma* or an *Austenia*.

2. *AUSTENIA? ERRATICA*, n. sp.

Locality. Pingoung, Shan Hills.

Shell depressedly globose, narrowly-umbilicated, solid for size; sculpture none, surface quite smooth; colour white, shiny, but both specimens are bleached; it has evidently an epidermis when alive; spire flatly rounded, apex low; suture adpressed; whorls $3\frac{1}{2}$; aperture ovate, very oblique, very slightly descending at the peristome, this is thin, sinuate above; columellar margin oblique, reflected near the umbilicus.

Size: maj. diam. 8·2, min. 7·0, alt. axis 4 mm.

This shell was marked *Durgella levicula* by Mr. Ponsonby. It is not of that species, which has a very thin and glassy shell, is much more globose and with higher spire. I put it only provisionally in the present genus. The distinct umbilication is quite unlike any shell of this type I have seen. It has somewhat the outline of *Cryptosoma præstans* in miniature, but it is not the young of that species, with which I have compared it.

3. *MACROCHLAMYS? CONSEPTA*, Bs., small var.

This shell agrees exactly in all its characters and size with specimens from the Moolé-it range, Tenasserim, described and figured by me in 'Land and Freshwater Moll. Ind.' p. 110, the only difference being in its ruddy-brown colour, the more southern form being olivaceous ochre; coloration is very variable.

4. *HEMIPLECTA? ZIMMAYENSIS*, n. sp.

Locality. Zimmè, Siam territory (coll. *Godwin-Austen*, type).

Shell globosely turbinate, well umbilicated, solid; sculpture wavy broken longitudinal ribbing, crossed by the transverse lines of growth; colour pale umber-brown, merging into white on the periphery and underside; spire subconical, apex blunt; suture impressed; whorls

6, convex; aperture ovate, oblique; peristome simple; columellar margin suboblique, scarcely reflected.

Size: maj. diam. 60·5, min. 51·25, alt. axis 29·5, body-whorl 28·0 mm.

This fine shell seems to be nearest to *H. humphreysiana*, Lea. Mr. Theobald writes that the largest in his collection is 65 millim. in major diam.

5. *HELIX* (*TRACHIA*) *EMENSUS*, n. sp.

Locality. Hlindet, 1200 feet.

Shell subdiscoid, widely umbilicated; sculpture ill-defined irregular transverse striation; colour horny or pale ochraceous; spire subconoid, apex blunt; suture shallow; whorls 7, regular, flat, closely wound, the last descending suddenly, subangulate on periphery; aperture nearly circular, oblique; peristome much reflected below, the margins joined by callus on body-whorl.

Size: maj. diam. 13·5, min. 11·8, alt. axis 4·8 mm.

This species belongs to the widely distributed group in this part of India represented by *H. akontongensis*, *oldhami*, &c. This form is much smaller, and differs sufficiently from all the species I know, that I have considered it worthy of naming.

6. *HELIX* (*TRACHIA*) *CLARUS*, n. sp.

Locality. Hlindet.

Shell subdiscoid, openly umbilicated; sculpture irregular, close transverse striation; colour white (but both specimens are bleached); spire depressedly conical, apex rounded; suture shallow; whorls 5, flat, subangulate on periphery, the last slightly descending; aperture oval, very oblique; peristome thin, slightly reflected.

Size: maj. diam. 9·5, min. 8·5, alt. axis 4·0 mm.

This species belongs to the *Helix huttoni* group of shells, but is quite distinct, especially in the shape of the aperture. Only two specimens are in the collection.

7. *HELIX* (*GENESELLA*) *HARIOLA*, Bs.

Localities. Khagan on Irrawaddy, and Hlindet, 1200 feet.

There are two specimens in the collection; one is like the type, the other is keeled—var. *carinata* of W. T. Blanford's collection.

8. *HELIX* (*PLANISPIRA*) *SCULPTURITA*, Benson.

Locality. Shan Hills.

9. *EUPLECTA* *PINGOUNGENSIS*, n. sp.

Locality. Pingoung, Shan Hills.

Shell depressedly conoid, umbilicated, subangulate on periphery; sculpture well-defined and regular curving costulation, disappearing on the periphery, thence smooth to the umbilicus; colour pale horny; spire low, apex flat and rounded; suture moderately impressed; whorls 6, convex, rather closely wound, flatly convex below; aperture

oblique, semilunate; peristome strong; columellar margin very oblique.

Size: maj. diam. 12·25, min. 11·20, alt. axis 5·0, body-whorl 6·5 mm.

This shell belongs to a group common in Arakan &c. (*E. pansa*, *helicifera*, *ataranensis*, *mammillaris*), but is of a more depressed form and larger in size, smooth below and well sculptured above; *E. falcata* is a large representative of the group in the Khasi Hills.

10. HELIX (PLECTOPYLIS) PONSONBYI.

Locality. Hlindet, Upper Burmah, 1500 feet.

Shell sinistral, widely umbilicated, discoid, solid; sculpture, wavy thread-like lines of growth; colour pale brown; spire flat, $2\frac{1}{2}$ whorls at apex slightly raised above the succeeding whorls; suture very shallow; whorls 7, closely wound and flat; aperture very oblique, descending, horizontally ovate; peristome thickened, reflected, the margin connected by a well-developed ridge, and with slight notches at the inner angles.

Size: maj. diam. 17·5, min. 14·0, alt. axis 5 mm.

Palatal teeth 6, the 1st highest, long, thin, like a knife-edge, the 2nd and 3rd are short and rounded above, the 4th and 5th are united; the 6th, situated on the lower outer side of the body-whorl, is short, somewhat thickened and rounded on the free edge. The parietal vertical laminae are two in number; the anterior situated about 10 millim. from the inner margin of the peristome. The anterior one is curved, solid, arched above, with two short buttresses above and below on the anterior side. The posterior one is obliquely set, is thin, and of nearly even height throughout.

The horizontal parietal lamina is only present as a short and narrow ridge 3 millim. in length, situated just within the aperture, but not connected with the apertural ridge of the peristome; a thread-like, free, narrow, horizontal lamina, commencing from below the posterior vertical lamina, extends forwards towards the aperture, gradually fining out but not extending to it.

To the ordinary observer the shell would only possess the one simple short ridge near the peristome, all the other complicated structure being out of view so far back within the aperture.

11. HELIX (PLECTOPYLIS) PERARCTA, W. T. Blanford.

Locality. Hlindet, 1200 feet.

Size: maj. diam. 10·0, min. 8·0, alt. axis 3·5 mm.

The type of this species came from near Ava. In this specimen the horizontal lamina is continuous to the aperture, in others it is sometimes undeveloped for a short distance (*vide* P. Z. S. 1874, pl. lxxiv. f. 4).

12. STREPTAXIS THEBAWI, n. sp.

Locality. Pingoung, Shan Hills, 2500 feet.

Shell ovately globose, umbilicated, somewhat solid; sculpture finely costulated throughout; colour white; spire conical, apex

rounded; suture well defined; whorls 6, the last two the largest, the penultimate swollen and projecting beyond the body-whorls; aperture oblique, semi-oval, with one rather long parietal lamella fining out inwards and backwards; peristome white, sinuate above, somewhat thickened, regular throughout, the two margins united by a callus; columellar margin oblique.

Size: maj. diam. 10·0, min. 7·0, alt. axis 6·5 mm.

Compared with the Burmese species hitherto known this is nearest to *S. birmanica*, but is higher in the spire, and the second whorl is more tumid, the lamella is more strongly developed.

13. PUPA SALWINEANA.

Pupa salwineana, Theobald, J. A. S. B. 1870, vol. xxxix. pt. 2, p. 400; figd. Conch. Ind. pl. c. f. 9.

Locality. Pingoung, Shan Hills, 2500 feet.

Size: maj. diam. 2·50, alt. axis 5·50 mm.

This is a very beautiful little shell. The only perfect specimen is bleached, but a smaller imperfect one shows that it is covered with a brown epidermis.

14. CLAUSILIA (PSEUDONENIA) SHANICA, n. sp.

“*Testa breviter rimata, fusiformi-clavata, carneo-grisea solidula; spira concavo-turrita, valde elongata; apex minutus, acutissimus. Anfr* 13½, *lentissime accrescentes, convexusculi, sutura impressa disjuncti, subtiliter striati, ultimus penultimo parum major, subtus leviter attenuatus, cervice rotundatus. Apert. parva, obliqua, late piriformis; perist. continuum, breviter solutum, expansiusculum. Lamellæ modicæ, compressæ, approximatae; supera marginalis, parum alta, intus humillima, cum spirali ut videtur continua; infera sublimis, subhorizontaliter in diam aperturam prosiliens, antice in denticulum desinens, a basi intuenti valde spiraliter torta; subcolumellaris subemersa, oblique intuenti distinctissima. Plica principalis profunda, lateralis, in apertura antice vix conspicua; palatales 2, altera supera, principali approximata et parallela, altera infera cum clausilio perspicuo lunellam lateralem, magis minusve distinctam, fingente.*”

Alt. 19½, diam. 4 mm.; alt. apert. 3⅝, lat. apert. 2¾ mm.

Hab. Shan Hills, near Pingoung, Burma, at a height of about 2500 feet. (Boettger.)

This description is somewhat amended by Mr. Ponsonby from one by Dr. Boettger, who considered it to be allied to *C. affinis* of the Naga Hills. On comparison it proves to be very different in every way.

321957 15. CYCLOPHORUS CRASSALABELLA, n. sp.

Locality. Shan Hills.

Shell similar in form to *C. fulguratus*, rather openly umbilicated; coloration, a distinct narrow dark brown band on the periphery, sharply defined above, giving off below a regular series of zigzag markings, like a fringe hanging from it; the whorls above are orna-

mented with similar zigzag bands at equal intervals, but which do not extend to the peripheral band; spire conical, apex fine; whorls 5; aperture subvertical; peristome of a pale yellowish tint, very much thickened to the extent of 4·5 millim.

Size: maj. diam. 41·5, min. 32·0, alt. axis 18·5 mm.

16. *CYCLOPHORUS*, sp. inc.

Locality. Shan Hills.

Size: maj. diam. 31·0, min. 25·5, alt. axis 15·0 mm.

In form this shell is nearest to *C. excellens*, Pfr., from Moulmein, particularly as regards the umbilicus and height of spire; its markings differ, and the size is much smaller. I hesitate to name this single specimen; a series of examples in fresh condition is required for these shells, so variable in colour.

17. *PTEROCYCLOS ALBERSI*.

Locality. Hlindet, 1200 feet.

18. *ALVÆUS (DIORYX) URNULA*, var.

Locality. Pingoung, Shan Hills, 2500 feet.

The only difference between this and the Assamese form is the greater length of the sutural tube in the Burmese shell.

19. *ALVÆUS SPRATTI*, n. sp.

Locality. Pingoung, Shan Hills, 2500 feet.

Shell pyramidal, closely umbilicated; sculpture very fine close costulation, more distant between the sutural tube and the peristome; colour white, with pale lemon tinge, or horny; spire high, rapidly decreasing to apex, which is rather pointed; suture well impressed; whorls $5\frac{1}{2}$, convex, the last swollen, slightly constricted at the sutural tube, which is very short and thick, less than one millim. in length; the whorl swells again to the aperture, this is circular, oblique; peristome double, slightly reflected; operculum not seen.

This species is quite new; it might be at first taken for a small variety of *A. pyramidalis*, Bs., from the Tenasserim valley, but the sutural tube is in that species very thread-like and nearly 3 millim. in length; the aperture is also very different in form, and not so simple and circular.

20. *PALUDOMUS ORNATISSIMA*, Bs.

Locality. Between Myingyan and Hlindet.

21. *MELANIA*, sp. inc.

A specimen in bad broken condition.

22. *AMPULLARIA PALUDINOIDES*, Phil., var.

Locality. Khyang-nyat.

The present example agrees with a specimen in my collection from Pegu.

23. *AMPULLARIA OLEA*, Reeve.

Locality. Shan Hills.